

REMARKS/ARGUMENTS

This Amendment is responsive to the Office Action mailed on March 7, 2006.

In this Amendment, claims 9, 21, and 25 are amended, and claims 26-29 are added so that claims 1 and 4-29 are pending and subject to examination.

At page 2 of the Office Action, the Examiner objects to claim 25. Claim 25 is amended to address the objection. Withdraw of the objection is requested.

I. **35 USC 103 - Hoffman (US 6,603,183) in view of Johnson (US 4,124,860)**

Claims 1 and 4-25 are rejected as being obvious over Hoffman and Johnson. This rejection is traversed.

A. Independent claim 1

Independent claim 1 is not obvious in view of Hoffman and Johnson, because all limitations are not taught or suggested by these references. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). MPEP § 2143.03. Independent claim 1 recites, *inter alia*, "wherein the optocoupler package further comprises a plurality of conductive structures coupled to the leadframe, **wherein the conductive structures have heights greater than the heights of the optical receiver and the optical emitter, and wherein the conductive structures are solder structures**". As shown in FIG. 9 of the present application, the solder structures 25 are taller than the optical emitters and receivers 26, 27 so that the package can be flip chip mounted to a circuit board (see FIG. 11). This limitation is neither taught nor suggested by either Hoffman nor Johnson et al.

The Examiner states that Hoffman discloses:

bond wires (108) that have heights greater than the height of the optical receiver 108 and are solder structures disposed within encapsulant (119).

"Bond wires" are clearly not "solder". As the Examiner is aware, solder is a deformable material and is not used for "bond wires". Should the Examiner maintain that the bond wires 118 in Hoffman are "solder structures", Applicants request that the Examiner point out a column and line number in Hoffman which states this. Accordingly, since Hoffman et al. and Johnson fail to teach or suggest all limitations in independent claim 1, independent claim 1 and dependent claims 2-8 should be in condition for allowance.

B. Independent claim 9

Claim 9 is not obvious in view of Hoffman and Johnson. Independent claim 9 recites a method including, *inter alia*, depositing a light transmissive material between the optical emitter and the optical receiver to form an optocoupler package, wherein the optocoupler package is thereafter configured to be flipped over and mounted to a circuit board as recited in independent claim 9. As shown in FIG. 7 of the present application, a package 20 can be first formed, and then as shown in FIG. 11, it can be flipped over and mounted to a circuit board 31. Clearly, no such package configuration is shown or suggested by Hoffman and Johnson.

Also, modifying Hoffman to arrive at the invention of claim 9 would result in an inoperative device. If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). MPEP 2143.01. If one were to flip over the package 100 in Hoffman and mount it on a circuit board, one would produce an inoperative device. There would be no electrical connection to any circuit board because an insulating lid 130 would prevent connection to the circuit board. Accordingly, there is no motivation to modify Hoffman to arrive at the invention of independent claim 9 and also dependent claims 10-15.

C. Independent claim 16

The Examiner states that neither Hoffman nor Johnson discloses the use of a plurality of optocouplers, but that this would have been a "mere matter of duplication of parts". This rejection is traversed.

As shown in FIG. 3 of the present application, Applicants' leadframe structure can be processed (e.g., etched) so that it can accommodate multiple optocouplers. As shown in FIG. 3, the leadframe structure is discontinuous and can accommodate two or more optocouplers.

No such configuration is present in Hoffman or Johnson. Johnson's package is not designed to accommodate multiple diodes, detectors, or optocouplers so Johnson cannot teach or suggest the invention of independent claim 16 or any claims dependent therefrom.

Applicants submit that using multiple optocouplers within a single package is not a "mere matter of duplication parts". As noted at paragraph [0027] of the specification, in embodiments of the invention, a single optocoupler package can provide the same or improved performance over multiple (e.g., four) optocoupler packages. This allows for a simpler motherboard design and also saves space on the motherboard. These advantages are also not taught or suggested by Hoffman. Accordingly, Applicants submit that independent claim 16 and dependent claims 17-20 are allowable.

D. Independent claim 21

Independent claim 21 and dependent claims 22-24 are also patentable. Claim 21 has been amended to indicate that the substrate that is being used includes a leadframe that is "half-etched" (i.e., at least partially etched, but not completely etched). This is described at paragraph [0029] of the present specification.

Clearly, no such structure is taught or suggested by Hoffman or Johnson so claims 21-24 are allowable in view of Hoffman and Johnson. In fact, Hoffman et al. fails to even mention the word "etch" at all, so it clearly cannot teach or suggest a half-etched leadframe.

E. Independent claim 25

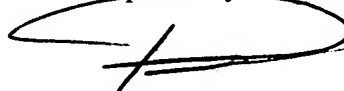
Independent claim 25 recites an assembly including, *inter alia*, "a printed circuit board, wherein the optical emitter and the optical receiver are disposed between the substrate and the printed circuit board". An example of this is shown in Figure 11 in the present application.

Clearly, no such structure is shown or suggested in Hoffman or Johnson. The alleged "substrates" in both Hoffman and Johnson would optical have chips on top of them. The substrates would then be mounted bottom side down so that the optical chips would not be disposed between any printed circuit board and any alleged substrate. Accordingly, independent claim 25 and any claims dependent thereon are patentable over Hoffman and Johnson.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 415-576-0200.

Respectfully submitted,



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